

(19) Japanese Patent Office

**EXAMINED UTILITY MODEL  
APPLICATION PUBLICATION****(11) Examined Utility Application  
No. Sho 52[1977]-48640**

(44) Publication Date: November 5, 1977

(51) Int. Cl.<sup>2</sup>  
A 62 C 31/12  
B 05 B 1/02

Identification Code

(52) Japan Classification  
95 B 24  
64 F 221JPO File No.  
7215-25  
7603-34(Total of 2 pages)

(21) Application No.: Sho 48[1973]-106462  
 (22) Application Date: September 10, 1973  
 Publication No.: Sho 50[1975]-53994  
 (43) May 23, 1975

(71) Applicant(s): Morita Pump, Inc.  
 5-5-20 Koro Higashi, Ikoma-ku,  
 Osaka-shi  
 (72) Inventor(s): Yoshio Matsushita  
 Morita Pump, Inc.  
 Takaida Factory  
 2-34 Takaida, Higashi Osaka-shi

Norihiro Hino  
 Same as above

Kantsu Ishida  
 Same as above

(74) Agent: Hide Ehara, patent attorney  
 (and one other)

(54) FOAM-GENERATING NOZZLE

**(57) CLAIM**

Foam-generating nozzle characterized in that in a foam-generating nozzle that is configured by installing a nozzle center body at the tip of a nozzle mounting tube continuously [sic; connecting] to a hose, and further installing a nozzle outer casing with a large diameter having an external air inlet at said nozzle center body, when [the foam-generating nozzle is] used in a foam extinguisher, an injection tip having a different diameter is provided at the tip of the nozzle center body.

**DESCRIPTION OF THE INVENTION**

The present invention pertains to a foam-generating nozzle used in a foam extinguisher that discharges a fire-fighting chemical solution in a foam.

Conventionally, in this type of foam-generating nozzle, a nozzle center body having a hole with a diameter smaller than the internal diameter of a hose is mounted to the tip of the hose, the nozzle head portion of the nozzle outer casing having a large diameter is installed in the opposite direction at the other end, and an external air inlet to said inner nozzle head is

formed in the periphery of the injection tip of the nozzle center body in order to realize a better foam-generating leverage when discharging a foam-like, fire-fighting chemical solution to [extinguish] a petroleum fire and to improve the fire-fighting capability of the fire extinguisher. When using a fire extinguisher by discharging a chemical solution, its flow velocity is increased at the hole of the nozzle center body, and it is sprayed at the inner nozzle head along with the air of the nozzle outer casing. After penetrating through this, it is sprayed to the outside; at the same time, external air is taken in on the path from the supply inlet to the chemical discharging outlet inside the casing tip by means of the Venturi effect, then mixed in the spraying solution to preliminarily promote acceleration of the foam-generating effect. However, with this method there are problems involving insufficient intake of said external air, inadequate mixing with the sprayed solution, and low dispersion rate of the chemical solution in the nozzle head because the chemical solution is sprayed in a straight line in the nozzle head.

The present invention is to provide a foam-generating nozzle that can sufficiently carry out a preliminary foam-generating operation, increase the foam-generating leverage during foam discharge to extinguish a fire, and improve the effect of choking off the fire using foams as well as the fire-fighting capabilities of a foam extinguisher.

The following explains the constitution of the present invention with reference to figures.

In Figure 1, 1 is a nozzle center body that configures a foam-generating nozzle, 2 is a nozzle outer casing, 3 is a nozzle mounting tube, 4 is a hose connecting fixture, and 5 is a hose connecting to a foam extinguisher (not shown). At the center body 1, a male screw thread 1a of the rear part is tightened in a female screw thread 3a of the rear part of the mounting tube 3, and it is mounted protrusively. A taper with a diameter smaller than the internal diameter of hose 5 is mounted to the head portion of the hole 1b of the center body 1. An injection tip 1c of this center body 1 has a different diameter. In other words, a cross-shaped, divided groove 6 as shown in Figures 2 and 3, or a cross-shaped, concave groove 7 that is not opened to the periphery side as shown in Figures 4 and 5 is formed at the end of the nozzle head of the center body 1. A groove with an appropriate shape other than a cross shape, for example, a triangular shape, can be formed to give the injection tip 1c a different diameter. In addition, this injection tip 1c is tilted in one direction with respect to the axial direction, and the chemical solution is sprayed in a rotating movement to sufficiently disperse it and increase the spraying distance. The flanged casing portion 2a having a small diameter is mounted on the end of the outer casing 2, then fitted and joined together on the tip of casing 3; the joint uncoated portion 2b with a large diameter and having an external air supply inlet 8 is held together at the periphery of the injection tip 1c in the same center, and the nozzle part 2c integrated with this is retained in the opposite direction of the other line by maintaining the interval with [distance from] the injection tip 1c.

When the extinguisher is operated, the chemical solution flows to the nozzle hole 1b of the center body 1 passing through hose 5, with the flow velocity being increased by this tapered squeeze; it is then sprayed inside of nozzle head 2c along with the air from injection tip 1c. However, in doing so, the chemical solution is fully sprayed in a diffused [illegible] form into the

inlet of nozzle head 2c from the injection tip 1c having a different diameter. The external air from the external air supply inlet 8 is taken in a large quantity into this spray portion, mixed in the spray chemical solution, and discharged in the form of a foam from nozzle head 2c.

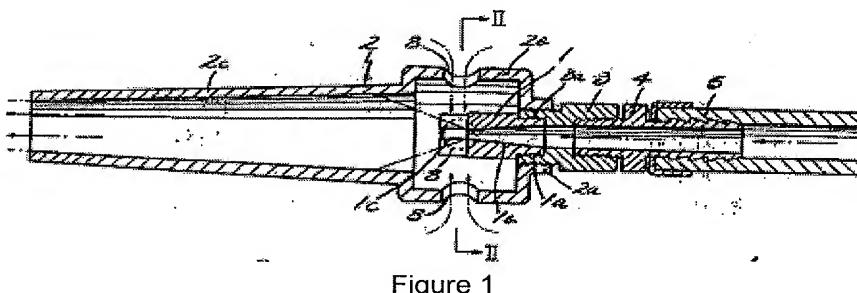
Small holes are formed continuously with several nozzle holes 1b at the tip of nozzle center body 1 to obtain an effective dispersion of the spraying solution.

According the present invention, in a foam-generating nozzle that is configured by installing a nozzle center body at the tip of a nozzle mounting tube continuously [sic; connecting] to a hose, and further installing a nozzle outer casing with a large diameter having an external air inlet at said nozzle center body, when [the foam-generating nozzle is] used in a foam extinguisher, an injection tip having a different diameter is provided at the tip of the nozzle center body to better improve the intake and mixing of the external air by the foam-generating nozzle and to effectively carry out a preliminary foam-generating operation, increase foam-generating leverage during foam discharge from the foam-generating nozzle, and improve the fire-fighting capabilities of the foam extinguisher to extinguish a petroleum fire, having a simple structure and inexpensive operation along with a high practical application value.

## **BRIEF EXPLANATION OF THE FIGURES**

Figure 1 is a longitudinal sectional view of the foam-generating nozzle of the present invention, Figure 2 is a transverse sectional view at line II-II of Figure 1, Figure 3 is a perspective view of the nozzle center body, Figure 4 is a longitudinal sectional view illustrating the variant of the injection tip of the nozzle center body, and Figure 5 is its front view.

2 ... nozzle outer casing, 8 ... external air supply inlet, 2b ... joint uncoated portion, 1c ... injection tip, 1 ... nozzle center body.



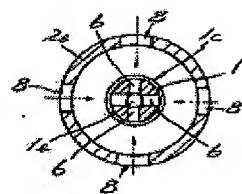


Figure 2

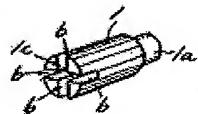


Figure 3

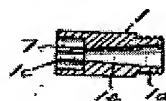


Figure 4

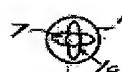


Figure 5

---

Translated by:

